

RFM75替换RFM73注意事项

一、软件设置注意事项:

1. Bank1 SPI 设置

RFM75 bank1 SPI 操作与 RFM73相同。

采用 RFM73 的 bank1 设置，芯片可以正常工作，为了获得更好的性能，建议 bank1 采用以下设置。

Bank1 Address (Hex)	250KHz	1MHz	2MHz
00	Reserved	Reserved	Reserved
01	Reserved	Reserved	Reserved
02	Reserved	Reserved	Reserved
03	Reserved	Reserved	Reserved
04	0xDB8A96F9	0x1B8296F9	0xDB8296F9
05	0xB60F0624	0xA60F0624	0xB60F0624
06	Reserved	Reserved	Reserved
07	Reserved	Reserved	Reserved
08	Reserved	Reserved	Reserved
09	Reserved	Reserved	Reserved
0A	Reserved	Reserved	Reserved
0B	Reserved	Reserved	Reserved
0C	0x00127300	0x00127300	0x00127300
0D	0x36B48000	0x36B48000	0x36B48000
0E	0x 412008048120CFF7FEFFFF	0x 412008048120CFF7FEFFFF	0x 412008048120CFF7FEFFFF

2. 发射功率设置

RFM75 功率设置与 RFM73 不同，设置如下：

Bank1.Reg4<29:27>	Bank0.Reg6<2:1>	TX Power(dBm)
7	3	4
0	3	-1
0	2	-7
2	1	-12
3	1	-12
0	1	-18
3	0	-18
0	0	-25
Others Value		-1

3. RSSI 阈值

RFM75 RSSI 阈值不能调整。

	250KHz	1MHz	2MHz
RSSI 阈值(dBm)	-84	-80	-67

4. RFM75 PowerUP 后第一包数据发送不成功的解决方法

RFM75 从POWER DOWN状态切换到POWER UP状态，发送第一包不成功，原因是锁相环没有锁定，解决办法如下：

在正常发射数据前请按照以下流程操作：

power up=1

等待 2ms

操作 bank1 寄存器，对寄存器 04 的 bit25 写 1

等待 20us

操作 bank1 寄存器，对寄存器 04 的 bit25 写 0

等待 0.5ms.

再正常发射。

5. RFM75使用外部PA时，要将bank1 寄存器 04 设置为以下值：

250K: 0xDB8A96C1

1M: 0x1B8296C1

2M: 0xDB8296C1

二、硬件处理注意事项

1. 5V IO 应用处理

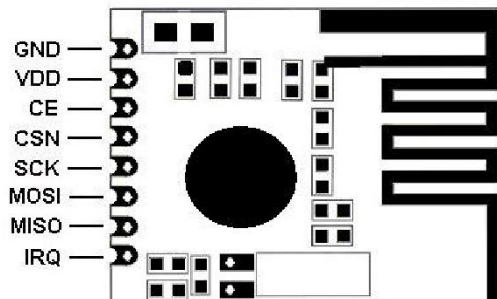
RFM75 的 IO 正常应用是输入接口高电平为芯片电源电压（1.9V to 3.6V）。

在有些应用中, IO 接口信号高电平比芯片电源电压高, 例如芯片电源电压为 3.3V, IO 接口高 电平为 5V, 需要在 SCK, CE, CSN, MOSI 上分别串联 2kohm 电阻。

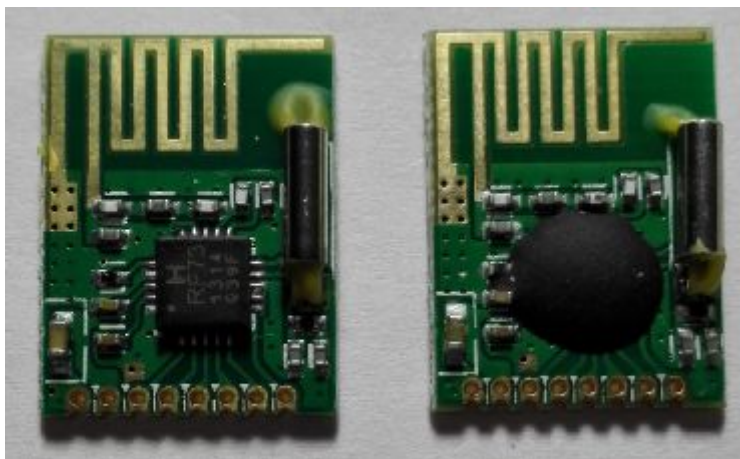
三、外观和封装

1. 模块脚位图

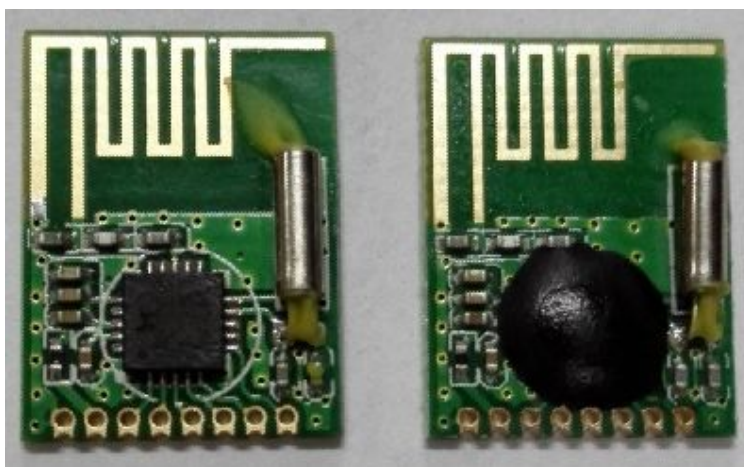
RFM75 和 RFM73 模块硬件脚位是完全兼容的，模块的尺寸大小没有变化。



2. RFM75 和 RFM73 外观有改变，对比图如下：



RFM73-P模块(左) 和 RFM73(右)模块外观图



RFM75-P模块(左) 和 RFM75(右)模块外观图

四、RFM73和RFM75模块参数对比

1. RFM73电气规格

Name	Parameter (Condition)	Min	Typical	Max	Unit	Comment
Operating Condition						
VDD	Voltage	1.9	3.0	3.6	V	
TEMP	Temperature	-40	+27	+85	°C	
Digital input Pin						
VIH	High level	0.7VDD		5.25	V	
VIL	Low level	VSS		0.3VDD	V	
Digital output Pin						
VOH	High level (IOH=-0.25mA)	VDD- 0.3		VDD	V	
VOL	Low level(IOL=0.25mA)	0		0.3	V	
Normal condition						
IVDD	Power Down current		2.5		uA	
IVDD	Standby-I current		50		uA	
IVDD	Standby-II current		330		uA	
Normal RF condition						
FOP	Operating frequency	2400		2527	MHz	
FXTAL	Crystal frequency		16		MHz	
RFSK	Air data rate	250		2000	Kbps	
Transmitter						
PRF	Output power	-40	0	3	dBm	
PBW	Modulation 20 dB bandwidth(2Mbps)		2.5		MHz	
PBW	Modulation 20 dB bandwidth (1Mbps)		1.3		MHz	
PBW	Modulation 20 dB bandwidth (250Kbps)		960		KHz	
PRF1	Out of band emission 2 MHz		-20		dBm	
PRF2	Out of band emission 4 MHz		-40		dBm	
IVDD	Current at -40 dBm output power		11		mA	
IVDD	Current at -30 dBm output power		11		mA	
IVDD	Current at -25 dBm output power		12		mA	
IVDD	Current at -10 dBm output power		13		mA	
IVDD	Current at -5 dBm output power		15		mA	
IVDD	Current at 0 dBm output power		17		mA	
IVDD	Current at 5 dBm output power		23		mA	
Receiver						
IVDD	Current (2Mbps)		22		mA	
IVDD	Current (1Mbps)		22		mA	
IVDD	Current (250Kbps)		22		mA	
Max Input	1 E-3 BER		10		dBm	
RXSENS	1 E-3 BER sensitivity (2Mbps)		-87		dBm	High Sen mode
RXSENS	1 E-3 BER sensitivity (1Mbps)		-90		dBm	High Sen mode
RXSENS	1 E-3 BER sensitivity (250Kbps)		-97		dBm	High Sen mode
C/ICO	Co-channel C/I (2Mbps)		3		dB	
C/I1ST	ACS C/I 2MHz (2Mbps)		-5		dB	
C/I2ND	ACS C/I 4MHz (2Mbps)		-25		dB	
C/I3RD	ACS C/I 6MHz (2Mbps)		-25		dB	
C/ICO	Co-channel C/I (1Mbps)		3		dB	
C/I1ST	ACS C/I 1MHz (1Mbps)		4		dB	
C/I2ND	ACS C/I 2MHz (1Mbps)		-25		dB	
C/I3RD	ACS C/I 3MHz (1Mbps)		-20		dB	
C/ICO	Co-channel C/I (250Kbps)		1		dB	
C/I1ST	ACS C/I 1MHz (250Kbps)		-11		dB	
C/I2ND	ACS C/I 2MHz (250Kbps)		-15		dB	
C/I3RD	ACS C/I 3MHz (250Kbps)		-28		dB	

2. RFM75电气规格

Name	Parameter (Condition)	Min	Typical	Max	Unit	Comment
Operating Condition						
VDD	Voltage	1.9	3.0	3.6	V	
TEMP	Temperature	-40	+27	+85	°C	
Digital input Pin						
VIH	High level	0.7VDD		VDD+0.7	V VIL	
	Low level	VSS		0.3VDD	V	
Digital output Pin						
VOH	High level (IOH=-0.25mA)	VDD- 0.3		VDD	V VOL	
	Low level(IOL=0.25mA)	0		0.3	V	
Normal condition						
IVDD	Power Down current		3		uA	
IVDD	Standby-I current		50		uA	
IVDD	Standby-II current		300		uA	
Normal RF condition						
FOP	Operating frequency	2400		2527	MHz	
FXTAL	Crystal frequency		16		MHz	
RFSK	Air data rate	250		2000	Kbps	
Transmitter						
PRF	Output power		4		dBm	
PBW	Modulation 20 dB bandwidth(2Mbps)		TBD		MHz	
PBW	Modulation 20 dB bandwidth (1Mbps)		TBD		MHz	
PBW	Modulation 20 dB bandwidth (250Kbps)		TBD		KHz	
IVDD	Current at -25 dBm output power		9.8		mA	
IVDD	Current at -18 dBm output power		10.2		mA	
IVDD	Current at -12 dBm output power		10.8		mA	
IVDD	Current at -7 dBm output power		11.6		mA	
IVDD	Current at -1 dBm output power		13.4		mA	
IVDD	Current at 4 dBm output power		18		mA	
Receiver						
IVDD	Current (2Mbps)		16.5		mA	
IVDD	Current (1Mbps)		16		mA	
IVDD	Current (250Kbps)		16		mA	
Max Input	1 E-3 BER		10		dBm	
RXSSENS	1 E-3 BER sensitivity (2Mbps)		-88		dBm	
RXSSENS	1 E-3 BER sensitivity (1Mbps)		-91		dBm	
RXSSENS	1 E-3 BER sensitivity (250Kbps)		-96		dBm	

五、Contact Information

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